

2.1 SPECIES DESCRIPTION

1. The piping plover (*Charadrius melodus*), named for its melodic mating call, is a small, pale-colored North American shorebird. It weighs 43 to 63 grams (1.5 to 2.3 ounces) and is 17 to 18 centimeters (6 to 8 inches) long. Its light, sand-colored plumage blends in well with its primary beach and sand flats habitat. During the breeding season the legs are bright orange and the short, stout bill is orange with a black tip. There are two single dark bands, one around the neck and one across the forehead between the eyes. Plumage and leg color help distinguish this bird from other plovers. The females' neck band is often incomplete and is usually thinner than the males' neck band. In winter, the bill turns black, the legs fade to pale orange, and the black plumage bands on the head and neck are lost. Chicks have speckled gray, buff, and brown down, black beaks, orange legs, and a white collar around the neck. Juveniles resemble wintering adults and obtain their adult plumage the spring after they fledge.
1. Piping plovers winter in coastal areas of the United States from North Carolina to Texas. They also winter along the coast of eastern Mexico and on Caribbean islands from Barbados to Cuba and the Bahamas. The international piping plover winter censuses of 1991 and 1996 located only 63 percent and 42 percent of the estimated number of breeding birds, respectively. Of the birds located on the wintering grounds during these two censuses, 89 percent were found on the Gulf Coast of the United States and eight percent were found on the Atlantic Coast of the United States. Information from observation of color-banded piping plovers indicates that the winter range of the breeding populations overlap to a significant degree. Therefore, the source breeding population of a given wintering individual cannot be determined in the field unless it has been banded or otherwise marked.
1. Piping plovers begin arriving on the wintering grounds in July, with some late-nesting birds arriving in September. A few individuals can be found on the wintering grounds throughout the year, but sightings are rare in late May, June and early July. Migration is poorly understood, but most piping plovers probably migrate non-stop from interior breeding areas to wintering grounds. However, concentrations of spring and fall migrants have been observed along the Atlantic Coast.
1. Behavioral observations of piping plovers on the wintering grounds suggest that they

¹ Information on the wintering piping plover and its habitat was obtained from the *Proposed Determination of Critical Habitat for the Wintering Piping Plover*, June 2000.

spend the majority of their time foraging. Primary prey for wintering piping plovers includes polychaete marine worms, various crustaceans, insects, and occasionally bivalve mollusks which they peck from the substrate surface or from just beneath the substrate surface. Foraging usually takes place on moist or wet substrate of sand, mud, or fine shell. In some cases, this substrate may be covered by a mat of blue-green algae. When not foraging, piping plovers undertake various maintenance activities including roosting, preening, bathing, aggressive encounters (with other piping plovers and other species) and moving among available habitat locations.

1. The habitats used by wintering birds include beaches, mud flats, sand flats, algal flats, and washover passes (areas where breaks in the sand dunes result in an inlet). Individual piping plovers tend to return to the same wintering sites year after year. Wintering piping plovers are dependant on a mosaic of habitat patches, and move among these patches depending on local weather and tidal conditions.
1. Beginning in late February, most piping plovers begin leaving the wintering grounds to migrate back to breeding sites. Northward migration peaks in late March, and by late May most birds have left the wintering grounds.

2.2 CONSTITUENT ELEMENTS OF CRITICAL HABITAT AND POTENTIAL DISTURBANCES

1. The primary constituent elements essential for the conservation of wintering piping plovers are those habitat components which support foraging, roosting, and sheltering, or have the capacity, through natural processes, to develop those habitat components and the physical features necessary for maintaining the natural processes that support these habitat components. The primary constituent elements are found in geologically dynamic coastal areas that support or have the potential to support intertidal beaches and flats (between annual low tide and annual high tide) and associated dune systems and flats above annual high tide. Important components of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. In some cases, these flats may be covered or partially covered by a mat of blue-green algae.

1. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting piping plovers. Such sites may have debris, detritus (decaying organic matter), or micro-topographic relief (less than 50 cm above substrate surface) offering refuge from high winds and cold weather. Important components of the beach/dune ecosystem include surf-cast algae, sparsely vegetated backbeach (beach area above mean high tide seaward of the dune line, or in cases where no dunes exist, seaward of a delineating feature such as a vegetation line, structure, or road), spits, and washover areas. Washover areas are broad, unvegetated zones with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action. Several of these components (sparse vegetation, little or no topographic relief) are mimicked in artificial habitat types used less commonly by piping plovers (e.g., dredge spoil sites).
1. These habitat components are a result of the dynamic geological processes that dominate coastal landforms throughout the wintering range of piping plovers. The integrity of the primary constituent elements depends upon daily tidal events, regular sediment transport processes, as well as the episodic, high-magnitude storm events, all of which are associated with the formation and movement of barrier islands, inlets, and other coastal landforms. By their nature, these features are in a constant state of change, and are therefore difficult to accurately delineate in perpetuity on a static map. Given that piping plovers evolved in this dynamic system, and that they are dependent upon the ever-changing features within broad areas for their continued survival and eventual recovery, critical habitat boundaries may include broader areas than those currently used by wintering piping plovers in order to capture sites which may develop appropriate habitat components in the future.
1. In most areas, wintering piping plovers are dependant on a mosaic of sites distributed throughout the landscape. Availability of habitat patches within this coastal landscape is dependent on local weather and tidal conditions. For example, a single piping plover may leave a site if it becomes inundated by a high tide or storm event, or if high winds or cold temperatures make the site unsuitable for foraging or roosting. This displaced individual will seek out patches within the landscape mosaic which have become available as tides recede, which provide refuge from inclement weather conditions, or which simply provide a roosting site until conditions become favorable to resume foraging.

2.3 PROPOSED CRITICAL HABITAT UNITS

1. At this time, the proposed critical habitat areas contained within the conservation units discussed below constitute the best evaluation by the Service of areas needed for the conservation of the piping plover on its wintering grounds. The Service has stated that the proposed critical habitat may be revised should new information become available prior to the final rule, and existing critical habitat may be revised if new information becomes available after the final rule.

1. Lands proposed as critical habitat include 146 critical habitat conservation units that contain areas with the primary constituent elements for the piping plover in the wintering range of the species. These units are found in all eight states where the piping plover winters. Appendix A describes each unit in terms of its location, size, and ownership. The Service considers all of the proposed critical habitat to be occupied by piping plovers.
1. The proposed critical habitat units cover 56 counties and parishes in eight states. The areas included range greatly in terms of the type and degree of economic activity present, thereby affecting the potential for effects from the designation of critical habitat. Some habitat is in or near urban areas with extensive shoreline development for commercial, industrial, and residential use; other areas are sparsely populated, undeveloped, and/or part of existing conservation areas.
1. Exhibit 2-1 provides a summary of the land ownership and linear shoreline distances proposed as critical habitat. Exhibit 2-2 provides land ownership on an areal basis. As shown, Texas dominates proposed habitat measured as shoreline while Louisiana has the most critical habitat in areal terms. Similarly, while Federal and private ownership dominate shoreline habitat, the greatest area of habitat is state-owned, including state waters. These estimates reflect the total area within mapped critical habitat conservation unit boundaries, without regard to the presence of primary constituent elements. The area actually affected by this proposal is therefore less than indicated in the Exhibits. For example, only about 2.5 percent of the Mississippi River Delta map unit contains the primary constituent elements.

Exhibit 2-1				
SUMMARY OF LOCATION AND OWNERSHIP PROPOSED CRITICAL HABITAT UNITS FOR THE PIPING PLOVER WINTERING POPULATION				
Linear Shoreline Measured in Miles				
	Federal	State	Private	TOTAL
North Carolina	73	40	40	153
South Carolina	14	31	24	69
Georgia	33	47	19	99
Florida	66	93	49	208
Alabama	9	14	37	60
Mississippi	61		70	131
Louisiana	62	105	175	342
Texas	285	53	272	610
Total	603	383	686	1,672

Exhibit 2-2	
SUMMARY OF LOCATION AND OWNERSHIP PROPOSED CRITICAL HABITAT UNITS FOR THE	

PIPING PLOVER WINTERING POPULATION				
Total Area of Units Expressed in Acres				
	Federal	State	Private	TOTAL
North Carolina	16,504	39,331	6,511	62,346
South Carolina	3,917	17,660	3,427	25,004
Georgia	6,081	25,592	5,819	37,492
Florida	44,058	140,520	4,191	188,769
Alabama	415	2,565	3,857	6,837
Mississippi	70,083	45,756	6,299	122,138
Louisiana	127,207	955,660	201,268	1,284,135
Texas	145,192	171,529	61,435	378,156
Total	413,457	1,398,613	292,807	2,104,877

2.3.1 Federal Lands

1. The areas proposed for designation as critical habitat for the piping plover includes property held or managed by the U.S. National Park Service, the U.S. Air Force, the U.S. Marine Corps, and the Service. Of the total linear shoreline (1,672 miles) of proposed critical habitat, roughly 36 percent (603 miles) is held or managed by these Federal agencies. Of the total area of units (2,104,879 acres), about 20 percent (413,459 acres) is held by these Federal agencies.

2.3.2 State Lands

1. The areas proposed for designation as critical habitat for the piping plover include shoreline property held by each of the states except Mississippi. Of the total linear shoreline (1,672 miles) of proposed critical habitat, roughly 23 percent (383 miles) is held by the states. Of the total area of units (2,104,879 acres), about 66 percent (1,398,613 acres) is held by the states. These state lands are diverse and include conservation areas, recreational facilities, historical sites, and other types of state-owned land.
1. The large set of state agencies owning and managing land included in the proposal makes it difficult to generalize regarding potential economic impacts. For example, the Department of Environmental Protection (DEP) and the Florida Park Service in Florida manages coastline that is heavily utilized for beach recreation, and the DEP has stated its desire to work with the Service to provide as much protection as possible while still allowing beach access.² Another state agency that may potentially be affected by the designation is the Texas General Land Office (GLO), which holds title to all submerged lands in Texas (including tidal flats) and receives Federal funding for some programs (hence a nexus).

2.3.3 Private Lands

² Letter from the Department of Environmental Protection, State of Florida, May 15, 2000.

1. The areas proposed for designation as critical habitat for wintering piping plovers include 686 miles of privately owned shoreline, roughly 41 percent of the total (1672 miles). Most of this private shoreline is located in Texas and Louisiana. The Service is concerned about the cumulative impact of developing small parcels, with installation of piers, bulkheads and other shoreline stabilization along the coast. The U.S. Army Corps of Engineers (the Corps) will continue to be a major participant in consultation related to coastal lands, particularly with respect to new residential development. Other Corps permitted or funded projects include inlet stabilization and beach restoration at various points along the coast. Because the Corps's influence is so important to this species, and because impacts from even small projects can add up over time, the Service has stated that it would like the Corps to consult programmatically on actions that may impact piping plover habitat, instead of consulting on individual actions.³
1. Likewise, the Federal Emergency Management Agency (FEMA), through the National Flood Insurance Program (NFIP), may play a role in the Carolinas and in Gulf Coast states other than Texas. Some coastal construction will be insured by NFIP, forming a Federal nexus. However, in general, if building is taking place in a region covered under the Coastal Barrier Resources Act, then there is probably not a nexus with FEMA because funds for properties protected under this Act are not available through NFIP.⁴

³ Initial meeting for piping plover critical habitat economic analysis, Corpus Christi, Texas, May 3, 2000.

⁴ Initial meeting for piping plover critical habitat economic analysis, Corpus Christi, Texas, May 3, 2000.